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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/945,294 | 08/31/2001 | Michael T. Davis | TI-27561 | 2035 |

23494 7590 03/26/2003

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EXAMINER

NGUYEN, MICHELLE P

ART UNIT PAPER NUMBER

2851

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/945,294

Applicant(s)

DAVIS ET AL.

Examiner

Michelle Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-18 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 3, 2003 in response to the Office action mailed September 17, 2002 have been fully considered but they are not persuasive.

With regard to claim 1, applicant states in error that examiner cited column 7, lines 10-8, 29-31, and figures 3 and 4 of Rodriguez, Jr. et al. as teaching the locking mechanism set forth in the claim. With respect to the locking mechanism, examiner actually cited column 7, lines 27-34 (see Office action, Pg. 4, line 17). Here Rodriguez, Jr. et al. teach the projection head to be placed in an "exact pivotal registration" in the operating mode. The term "exact pivotal registration" teaches implicitly a locking mechanism for holding the projection head in place when the projection head is in the operating position. Further, Rodriguez, Jr. et al. teach explicitly a locking mechanism, namely detents, for placing the projection head in an exact pivotal registration in the operating mode (see Col. 7, lines 35-43).

Applicant argues claims 2-12 depend from claim 1 and should therefore be deemed allowable. However, claims 2-12 are not considered as containing allowable subject matter for the reasons discussed above in connection with claim 1.

With regard to claim 13, applicant argues that Rodriguez, Jr. et al. teach explicitly the sequential color wheel to remain within the projector head. Rodriguez, Jr. et al. teach the rearrangement of elements to reduce the size and

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weight of the projector head (see Col. 11, line 65 to Col. 12, line 1). Although in the particular embodiment disclosed, Rodriguez, Jr. et al. teach the sequential color wheel to remain within the projector head, it is clear that placing the sequential color wheel in the frame as a matter of design choice and/or to further reduce the weight in the projector head would be optically equivalent to placing the sequential color wheel in the projector head.

Applicant argues in error that claim 14 has been rejected, but because of its dependency from claim 13, should be deemed allowable. Claim 14 has not been rejected. Rather, claim 14 has been objected to, and considered as containing allowable subject matter for the reasons set forth in the previous Office action only.

Applicant argues claims 15-18 depend from claim 13 and should therefore be deemed allowable. However, claims 15-18 are not considered as containing allowable subject matter for the reasons discussed above in connection with claim 13.

Applicant argues in error that claims 19 and 20 depend from claim 13 and should therefore be deemed allowable. Claims 19 and 20 do not depend from claim 13, and have been allowed for the reasons set forth in the previous Office action.

In addition to examiner's objections to the specification, drawings and claims set forth in the previous Office action, the grounds for rejection of claims 1-18 set forth in the previous Office action are again set forth below.

Specification

2. The disclosure is objected to for the following reasons:
- (a) On Pg. 11, line 4, "integration optics 68" should be --integration optics 38--.
 - (b) On Pg. 11, line 7, "DMD 32" should be --DMD 32a--.
 - (c) On Pg. 12, line 26, "platform unit 12" should be --platform unit 41--.
 - (d) On Pg. 15, lines 4-5, reference sign "121" has been used to designate both a mirror and a source.

Appropriate correction is required.

Drawings

3. The drawings are objected to for the following reasons:
- (a) The drawings fail to comply with 37 CFR 1.84(p)(4) because reference characters "14" and "44" have both been used to designate a projection lens in Figs. 4 and 5. In Fig. 5, reference sign "14" should be --44--.
 - (b) The drawings fail to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 45, 47, 62, 67, 69.
 - (c) The drawings fail to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 43, 67, 82, 82a, 124, 128.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply

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to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 11 and 12 recite the limitation "the rotating unit" in lines 6, 1-2 and 1-2, respectively. There is insufficient antecedent basis for this limitation in the claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Amended claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "wherein the optical unit is translated from the stow position to the operating position" in lines 1-2. The term "translated" indicates that the optical unit is moveable through rectilinear motion. However, claim 13 from which claim 15 depends recites the limitation "the optical unit moveable from a stow position to an operating position at an angle relative to the stow position" in lines 4-7. The term "angle" indicates that the optical unit is moveable through rotational motion. Therefore, the limitation set forth in claim 15 is considered to be contradictory to the limitation set forth in claim 13 from which claim 15 depends.

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Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 and 6-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,179,426 to Rodriguez, Jr. et al.

With regard to claim 1, Rodriguez, Jr. et al. disclose an SLM-based projection display system (projection system 100), comprising:

an articulating unit (projection head 106, arm 108) having at least the optical path components of the projection system 100 and the SLM (imager 134), the optical components comprising at least an illumination system and a projection lens (projection lens 140), the projection head 106 moveable from a stow position to an operating position, such when projection head 106 is moved to the operating position, the image formed by the imager 134 is reoriented to a position suitable for viewing (see Col. 6, lines 52-7, Figs. 3-6);

a platform unit (frame 104) operable to rest on a flat surface when the projection system 100 is in use (see Col. 6, lines 58-64, Fig. 5),

at least one mechanism (hinge unit 110) for attaching the projection head 106 to the frame 104, such that the arm 108 and the frame 104 may form an angle relative to each other when the projection head 106 is deployed and

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may lie in parallel planes in the stow position (see Col. 7, lines 10-8, 29-31, Figs. 3, 4); and

a locking mechanism for holding the projection head 106 in place when the projection head 106 is in the operating position (see Col. 7, lines 27-34).

With regard to claim 2, Rodriguez, Jr. et al. teach the projection head 106 as discussed above with respect to claim 1 to contain all operating components of the projection system 100 (see Col. 9, lines 31-43, Fig. 6).

With regard to claim 3, Rodriguez, Jr. et al. teach the frame 104 as discussed above with respect to claim 1 to contain at least a power supply (see Col. 9, lines 46-50).

With regard to claim 4, Rodriguez, Jr. et al. teach the locking mechanism as discussed above with respect to claim 1 to be a self-locking mechanism associated with the hinge unit 110 (see Col. 7, lines 27-34).

With regard to claim 6, Rodriguez, Jr. et al. teach the arm 108 as discussed above with respect to claim 1 to further contain a power supply (control and power electronics module 118) (see Col. 9, lines 34-7, 43-5).

With regard to claim 7, Rodriguez, Jr. et al. teach the projection system 100 as discussed above with respect to claim 1 to be housed within a housing no more than two inches in height (see Col. 7, lines 23-6). Rodriguez, Jr. et al. teach the projection system 100 to have a minimal thickness of 2-3 inches, wherein a thickness of 2 inches renders a height of no more than 2 inches.

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With regard to claim 8, Rodriguez, Jr. et al. teach the projection system 100 as discussed above with respect to claim 1 to be housed within a housing less than ten inches on each side (see Col. 10, lines 55-6, Figs. 3, 4). In the figures, the frame 104 to which the screen is attached is shaped as a square, wherein the sides of the square are less than ten inches given that the screen diagonal is 42-60 inches long.

With regard to claim 9, Rodriguez, Jr. et al. teach the imager 134 to be a digital micro-mirror device (see Col. 11, lines 15-8).

With regard to claim 10, Rodriguez, Jr. et al. teach the imager 134 to be a reflective liquid crystal display array (see Col. 11, lines 20-5).

With regard to claims 11 and 12, it is understood that the illumination requirements of the imager 134 as discussed above with respect to claim 1 and the tilt position thereof determine in part the angle between the arm 108 and the frame 104 when the projection system 100 is in use (see Col. 7, lines 32-3).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 13, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,179,426 to Rodriguez, Jr. et al.

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With regard to claim 13, Rodriguez, Jr. et al. disclose an SLM-based projection display system (projection system 200), comprising:

a repositionable optical unit (projection head 206) containing at least the SLM (imager 234), projection optics (condensing optics 236, 239), and a projection lens (projection lens 240), the optical unit movable from a stow position to an operating position at an angle relative to the stow position, the operating position being such that the image formed by the imager 234 is reoriented to a position suitable for viewing (see Col. 6, lines 52-7, Col. 11, lines 62-5); and

a platform unit (frame 204) operable to rest on a flat surface when the projection system 200 is in use, the frame 204 containing all other operating components of the projection system, comprising at least an illumination source (lamp 232) and a power supply (power supply and electronic components 218) (see Col. 11, line 65 to Col. 12, line 3, Fig. 7).

Rodriguez, Jr. et al. do not teach the a color wheel (color wheel 238) to be included in the frame 204. Instead, Rodriguez, Jr. et al. teach the color wheel (color wheel 238) to be included in the projection head 206. However, Rodriguez, Jr. et al. teach the rearrangement of elements included in the projection head 206, wherein the elements are moved to be included in the frame 204 for reducing the size and weight of the projection head 206 (see Col. 11, line 65 to Col. 12, line 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the color

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wheel of Rodriguez, Jr. et al. in the frame instead of the projection head for reducing the size and weight of the projection head.

With regard to claim 15, Rodriguez, Jr. et al. teach the projection head 206 as discussed above with respect to claim 13 to be translated at an angle from the stow position to the operating position (Col. 6, lines 52-7, Col. 11, lines 62-5).

With regard to claim 17, Rodriguez, Jr. et al. teach the projection system 200 as discussed above with respect to claim 13 to be housed within a housing no more than two inches in height (see Col. 7, lines 23-6, Col. 11, lines 62-5). Rodriguez, Jr. et al. teach the projection system 200 to have a minimal thickness of 2-3 inches, wherein a thickness of 2 inches renders a height of no more than 2 inches.

With regard to claim 18, Rodriguez, Jr. et al. teach the projection system 200 as discussed above with respect to claim 13 to be housed within a housing less than ten inches on each side (see Col. 10, lines 55-6, Col. 11, lines 62-5, Figs. 3, 4). In the figures, the frame 204 to which the screen is attached is shaped as a square, wherein the sides of the square are less than ten inches given that the screen diagonal is 42-60 inches long.

11. Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,179,426 to Rodriguez, Jr. et al. as applied to claims 1 and 13 above, respectively, and further in view of U.S. Patent No. 5,798,866 to De Vaan.

Rodriguez, Jr. et al. do not teach the optical path components of either of the projection systems 100 and 200 as discussed above with respect to claims 5

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and 16, respectively, to comprise telecentric prism optics. However, De Vaan teaches that it is well known in the art to employ in color projection systems prisms for generating beams of the three primary colors (see Col. 10, lines 25-8). De Vaan further teaches the prisms to distribute light telecentrically so as to ensure an even distribution of the light (see Col. 10, lines 31-3). It would have been obvious, then, to one having ordinary skill in the art at the time the invention was made to include in the optical path of either of the projections systems of Rodriguez, Jr. et al. telecentric prism optics for generating with an even distribution light for a color display.

Allowable Subject Matter

12. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 19 and 20 are allowed.

14. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claim 14, the prior art does not disclose an SLM-based projection display system, wherein an optical unit is both translated and rotated from a stow position to an operating position as set forth in the claim.

With regard to claim 19, the prior art does not disclose an SLM-based projection display system comprising a fold mirror in the optical path between an illumination source and the SLM, wherein when the projection display system in

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use, the fold mirror is operable to pop out from a platform unit and direct light from the illumination source to the SLM as set forth in the claim.

Claim 20 includes all limitations set forth in claim 19.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7723 for regular communications and 703-305-7723 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

mpn
March 24, 2003


RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800